

Read **SIMPLIFYING RATIONAL EXPRESSIONS** and then use what you know about simplifying fractions and exponents to simplify each expression fully.

1.  $\frac{18x^6}{27x^4}$

2.  $\frac{12x^3}{3x}$

3.  $\frac{(x+4)(x+5)}{2(x+4)}$

4.  $\frac{6(x+4)}{(x+3)(x+4)}$

5.  $\frac{x^2+6x}{3(x+6)}$

6.  $\frac{x^2-5x+6}{x^2+2x-15}$

Read **MULTIPLYING RATIONAL EXPRESSIONS** and then multiply the expressions below (*remember to factor when necessary*) and simplify the results.

7.  $\frac{12x^3}{25} \cdot \frac{40}{9x^2}$

8.  $\frac{6}{(x-5)(x-4)} \cdot \frac{5(x-5)}{15}$

9.  $\frac{6(x-3)}{4x^2} \cdot \frac{x^3}{2(x-3)}$

10.  $\frac{x+3}{4} \cdot \frac{x+2}{(x+3)(x+1)}$

11.  $\frac{5}{x+1} \cdot \frac{x^2-6x-7}{3(x-7)}$

12.  $\frac{x^2-2x-8}{x+3} \cdot \frac{x^2+7x+12}{2(x-8)}$

13.  $\frac{x+3}{x^2-4x+4} \cdot \frac{x^2-x-2}{x^2+4x+3}$

Read **ADDING AND SUBTRACTING RATIONAL EXPRESSIONS** and then add or subtract these rational expressions and simplify the results.

$$14. \frac{9}{15x} + \frac{2}{15x}$$

$$15. \frac{4x}{2x+3} - \frac{7}{2x+3}$$

$$16. \frac{x}{x^2-9} + \frac{3}{x^2-9}$$

$$17. \frac{7x+4}{x^2+3x+2} - \frac{3x-2}{x^2+3x+2}$$

$$18. \frac{2}{4(x+3)} + \frac{7}{x+3}$$

$$19. \frac{7}{x+2} - \frac{4}{x-5}$$

$$20. \frac{3}{x+5} + \frac{x}{(x+2)(x+5)}$$

$$21. \frac{1}{x+3} + \frac{4}{x^2+4x+3}$$

$$22. \frac{6x-7}{x^2+6x+5} + \frac{4}{x+5}$$

$$23. \frac{2x}{x-4} - \frac{8}{x^2-16}$$

**Solve each equation for  $x$ . SHOW WORK!**

$$24. \frac{15}{x-6} + \frac{7x}{x-6} = \frac{-6}{x-6}$$

$$25. \frac{11x}{4x+9} - \frac{14}{4x+9} = \frac{41}{4x+9}$$

$$26. \frac{3x}{7x} + \frac{1}{7} = \frac{4}{x}$$

$$27. \frac{2x}{3x} - \frac{5}{6} = \frac{5}{2x}$$